

10/06/00  
jc915 U.S. PTO

10-10-00

Case Docket No. 00-623

A

THE COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

jc916 U.S. PTO  
09/684174

10/06/00

Sir:

Transmitted herewith for filing is the patent application of:

INVENTOR: MARK MORELLI ET AL.

FOR: METHOD FOR WIRELESS DATA EXCHANGE FOR CONTROL OF STRUCTURAL  
APPLIANCES SUCH AS HEATING, VENTILATION, REFRIGERATION, AND AIR  
CONDITIONING SYSTEMS

Enclosed are:

- ( ~~xxx~~ ) One sheets of drawing(s).
- ( ) An Assignment of the invention to
- ( ) A certified copy of \_\_\_\_\_ Application  
No. \_\_\_\_\_, Filed \_\_\_\_\_.
- ( ) Verified statement(s) to establish small entity status  
under 37 CFR 1.9 and 37 CFR 1.27.
- ( ) INFORMATION DISCLOSURE STATEMENT, LISTING OF PRIOR ART ON  
FORM PTO 1449 AND COPIES.

The filing fee has been calculated as shown below:

For	No. Filed	No. Extra	SMALL ENTITY		OTHER THAN A SMALL ENTITY	
			Rate	Fee	Rate	Fee
Basic Fee				\$ 355		\$ 710
Total Claims	18	- 20 = 0	x 9	\$	x 18	\$
Indep Claims	3	- 3 = 0	x 40	\$	x 80	\$
Multiple Dependent Claim ( ) Presented			+135	\$	+270	\$
			TOTAL	\$	TOTAL	\$ 710

- ( ) Please charge my Deposit Account No. 02-0184 in the amount of \_\_\_\_\_. A duplicate copy of this sheet is enclosed.
- (xx) A check in the amount of \$\_\_\_\_\_ to cover the filing fee.
- (xx) The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 02-0184. A duplicate copy of this sheet is enclosed.
  - (x) Any additional filing fees required under 37 CFR 1.16.
  - (x) Any patent application processing fees under 37 CFR 1.17.
- (xx) The Commissioner of hereby authorized to charge payment of the following fees during the pendency of this application or credit any overpayment to Deposit Account No. 02-0184. A duplicate copy of this sheet is enclosed.
  - (x) Any patent application processing fees under 37 CFR 1.17.
  - (x) Any filing fees under 37 CFR 1.16 for presentation of extra claims.

Date: 10/6/00

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10-6-00

on

Janice T. Staton

Name and Reg. No. of Attorney

Signature

10/6/00

Date of Signature

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## BACKGROUND OF THE INVENTION

Structural devices or appliances such as heating, ventilation, refrigeration, air conditioning (HVAC), elevator equipment, building control and other types of systems and devices are integral to maintaining desired environment, security and the like in business, commercial and residential settings. Many such appliances require manual control and/or programming, as well as on-site maintenance and the like.

It is therefore the primary object of the present invention to provide a method whereby structural appliances can be controlled and serviced from a remote location.

It is a further object of the present invention to provide a method whereby useful data can be collected from the structural appliance and accessed from a mobile device.

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10-6-00

(Date of Deposit)  
**Janice I. Staton**  
 Name and Reg. No. of **SA**  
 Signature  
 10/6/04  
 Date of Signature  
**EXPRESS MAIL #EL398544841US**

SUMMARY OF THE INVENTION

In accordance with the present invention, the foregoing objects and advantages have been readily attained.

According to the invention, a method for remote control of structural appliances is provided, which method comprises the steps of communicating a structural appliance with a server programmed to accept mobile device commands; communicating a mobile device with said server; issuing said mobile device commands from said mobile device to said server; converting said mobile device commands to structural appliance commands; and issuing said structural appliance commands from said server to said structural appliance, whereby wireless control of said structural appliance is established.

In further accordance with the present invention, a method is provided for allowing remote control of structural appliances, which method comprises the steps of communicating a structural appliance with a server; programming said server to accept mobile device commands; converting said mobile device commands into structural appliance commands, and issuing said structural appliance commands to said structural appliance.

The mobile device is preferably a web-enabled device communicated with the server preferably utilizing wireless application protocol.

In further accordance with the present invention, information is also collected or "mined" from the structural appliances for use in determining best operating parameters, potential malfunction and need for maintenance, and the like.

Typical structural appliances for control in accordance with the present invention include HVRAC systems, elevator systems, building control systems, and the like.

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### DETAILED DESCRIPTION

The invention relates to a method for wireless control of structural appliances and, more particularly, to a method for controlling and obtaining data from structural appliances such as HVRAC systems, elevator systems, building control systems and other appliances.

In accordance with the present invention, structural appliances are communicated or operatively associated with a preferably wireless-accessible device or a server, preferably through a gateway, such that a person utilizing a mobile device can dial into the server and communicate with the structural appliances. The server and gateway are preferably adapted to provide intelligent control capability for the structural appliances.

Referring to the Figure, a plurality of appliances 10 are illustrated and communicated with a gateway 12 which is communicated with server 14. As shown, mobile device 16 is utilized to communicate with server 14 and appliances 10 through gateway 12, all through GSM network 18.

As discussed above, appliances 10 may be any combination of desired HVRAC systems, elevator systems, escalator systems, building control systems and the like. Such appliances, especially HVRAC appliances, can be operated at a number of different settings. Further, when operated with gateway 12, appliances can be rendered "intelligent", or be provided with capability to collect useful data related to past performance

and the like, which can be of interest to users, technicians and/or intermediate entities such as utility providers and the like, to enhance the benefits and useful life of the appliance. According to the invention, a method is provided for remote, preferably wireless, control of such appliances and operating settings or parameters, and remote, preferably wireless, access to such data. Gateway 12 is operatively associated with appliances 10 utilizing conventional hardware and software which are readily available to the person of ordinary skill in the art.

Gateway 12 as shown may suitably be any acceptable device such as a work station, personal computer, network of computers or other programmable device which is programmed to receive commands and issue them to the appropriate appliance 10. Gateway 12 is also preferably adapted to receive information, data and replies from appliances 10 for sending to server 14.

Server 14 is preferably programmed to store a database of appliance information including appliance identification, passwords, language, configuration, and telephone numbers or email addresses and the like for contacting users and technicians.

Server 14 may be any conventional preferably wireless-accessible device, most preferably accessible via GSM network global computer network, intranet, internet and the like, most preferably accessible via GSM network server 18 which is adapted to accept communications from mobile device 16, and preferably for accepting wireless access protocol (WAP) commands. In accordance with one preferred embodiment of the invention, commands will be received by server 14 in this protocol from a mobile device such as a WAP telephone, PDA and the like, and server 14 is preferably programmed and adapted to convert such protocol into machine-understandable commands and to issue such

commands back through GSM network 18 to gateway 12 and the desired appliance 10. This can be accomplished utilizing any of a wide variety of conventional conversion or translation programs, the use and selection of which would be well known to a person of ordinary skill in the art.

Gateway 12 preferably is adapted to convert mobile device commands such as WAP commands and information into structural appliance or machine-understandable commands and information and vice versa.

Mobile device 16 may be any suitable web-enabled preferably portable device, a PDA device, preferably a web-enabled phone utilizing wireless access protocol, cellular telephone, laptop or portable computer or other like wireless communication device, or may be a desktop computer, or other wired communication device as well within the broad scope of the present invention. Of course, the preferred device is a web-enabled wireless device which allows for the most versatility and benefit of the present invention.

In use, a user would access server 14 with mobile device 16, and server 14 would present the user with a display of options such as a requested password for access, a series of appliances which can be controlled, and the like. The user can select an option or enter a password, which results in WAP commands going through GSM network 18 to server 14. As set forth above, server 14 is programmed to translate the WAP or mobile device issued commands into commands meaningful to gateway 12 for controlling the desired appliance. Appliance 10 upon receiving the commands would enact the command, and respond with any appropriate or requested information.

The password may also be used by server 14 to identify which of a plurality of appliances the user is authorized to control, the expected language and protocol with which to

communicate with the user, and other useful user specific data such as US/metric units and the like.

If the user is a dealer or an intermediate provider, the password could be utilized to identify the appliances belonging to customers of that dealer for which access is authorized.

In connection with an appliance 10 which may be an HVRAC system, for example, an air conditioning system, the mobile device command could be a command identifying the air conditioning system, and indicating a particular temperature setting at which to operate, accompanied with a request for data as to energy consumption by the air conditioner over the past operation cycle.

Appliance 10 would receive suitable instructions enacting this command from gateway 12, change to operation at the desired setting, and issue machine-language responses to the request for data to gateway 12. Gateway 12 would then pass such information to server 14, which would convert the responsive information to a suitable format and send the information to mobile device 16 as desired. In the presently described embodiment, server 14 would convert the information to WAP and display one or more pages on mobile device 16 containing the requested information and, preferably, confirmation of the operating instructions.

According to the invention, either server 14 or gateway 12, or both, acts as a protocol translator between mobile device 16 and appliances 10. Preferably this function is carried out by gateway 12.

It should be readily appreciated that a user of appliances 10 and mobile device 16 could readily utilize this method in order to monitor energy consumption of appliance 10 while nevertheless setting appliance 10 to operate at a desired condition or parameter, all from any location whatsoever.

It should also be readily appreciated that the method in accordance with the present invention could be utilized by a technician to issue commands requesting identification of any unusual conditions experienced by appliance 10 and stored by gateway 12, and could also be utilized by a technician to issue a command for a machine to perform a diagnostic routine, for example, and provide results to gateway 12. In this manner, routine maintenance can be carried out on appliances 10 without the need for the technician to travel to the specific location of appliance 10, thereby making maintenance easier and reducing cost of same.

Another advantageous application of the method of the present invention is in connection with providing the possibility for broader service offerings from intermediate service providers such as utility companies. For example, the method of the present invention could be utilized to reduce energy consumption of selected and authorized appliances during peak demand days and the like so as to provide for easier energy management on a broad scale, or to allow pay for use type arrangements, and the like.

In addition, one or more of appliances 10, gateway 12 and server 14 could be adapted and configured to monitor for fault or failure conditions indicating failure of an appliance 10, or imminent failure of an appliance 10, and to provide this information to a technician through server 14 via mobile device 16 whereby further preventative maintenance can be conducted as appropriate.

For example, gateway 12 may be adapted to run a polling routine that scans one or more appliances for faults, which may be defined as non-zero values in a specific byte of a block of data received.



Upon detecting a fault, gateway 12 is preferably adapted to communicate to server 14, which can send a WAP message, pager message, email and the like to the proper personnel which identifies the appliance and type of fault.

As set forth above, gateway 12 and appliances 10 may be operated so as to collect and store raw data that can be retrieved by interested parties. This data can be related to all operating conditions of the appliance, such as air quality, heating and cooling efficiency, energy use, maintenance and diagnostic records and the like.

In accordance with a further embodiment of the present invention, the method of the present invention is particularly useful for providing remote control of heating, ventilation and air conditioning (HVAC) systems, especially those which are non-central systems such as window mounted units, Duct Free Split products and the like, since such systems typically have less-sensitive thermostats and are therefore more difficult to control. With such devices, the method of the present invention is ideal in allowing for remote operation of the system, for example to cool when desired and the like.

In accordance with a further embodiment of the invention, and as mentioned above, it may be desirable to provide utility companies such as energy providers with password access to HVAC systems of various energy provider customers so that the energy provider can manage energy consumption during peak demand periods. It may be advantageous to the energy provider to couple such a service with incentives to the energy customers whereby customers would then have incentive to enroll or register various HVAC equipment with the energy provider so that the energy provider can be allowed to control such devices.

The method of the present invention advantageously creates an integrated command, control and maintenance system for

multiple types of equipment that does not require a personal computer or large network. As set forth above, benefits to the end user include personalized comfort control features for home or small office environments, centralized comfort control features for building management, potentially reduced energy costs, more readily understandable information regarding air quality levels which can be used to adjust operation accordingly, and potentially lower maintenance costs.

Also as set forth above, benefits to technicians or equipment manufacturers include lower service and maintenance costs, and others. In the meantime, the method of the present invention further provides benefits to intermediate companies such as utilities, telecommunication operators and the like by allowing for broader content service offerings. These benefits are all provided by the enhanced efficiency involved in capture and dissemination of equipment operational data, as well as the ease of command, which are all facilitated by the method of the present invention.

It is to be understood that the invention is not limited to the illustrations described and shown herein, which are deemed to be merely illustrative of the best modes of carrying out the invention, and which are susceptible of modification of form, size, arrangement of parts and details of operation. The invention rather is intended to encompass all such modifications which are within its spirit and scope as defined by the claims.

WHAT IS CLAIMED

1. A method for remote control of structural appliances, comprising the steps of:
  - communicating a structural appliance with a server programmed to accept mobile device commands;
  - communicating a mobile device with said server;
  - issuing said mobile device commands from said mobile device to said server;
  - converting said mobile device commands to structural appliance commands; and
  - issuing said structural appliance commands from said server to said structural appliance, whereby wireless control of said structural appliance is established.
2. The method according to claim 1, wherein said server is communicated with said structural appliance through a gateway.
3. The method according to claim 2, further comprising the steps of:
  - storing structural appliance information at one of said structural appliance, said gateway and said server; and
  - transmitting said structural appliance information from said server to said mobile device.
4. The method according to claim 3, wherein said structural appliance information is provided in structural appliance format to said gateway, wherein said gateway converts said structural appliance format to mobile device format, and wherein said server transmits said structural appliance information to said mobile device in said mobile device format.

5. The method according to claim 3, wherein said structural appliance information comprises at least one type of information selected from the group consisting of diagnostic information, maintenance information, operating parameters, environmental information and combinations thereof.

6. The method according to claim 1, wherein said structural appliance is selected from the group consisting of heating, ventilation, air conditioning, refrigeration, building control and elevator appliances.

7. The method according to claim 1, wherein said mobile device is a web enabled device.

8. The method according to claim 7, wherein said mobile device is communicated with said server utilizing wireless application protocol.

9. The method according to claim 1, wherein said mobile device and said structural appliance are communicated with said server by a global satellite messaging network.

10. The method according to claim 9, wherein said server is communicated with said global satellite messaging network by a global computer network.

11. The method according to claim 10, wherein said mobile device issues said mobile device commands in wireless application protocol, and further comprising the step of converting said wireless application protocol to structural appliance protocol commands.

12. The method according to claim 10, wherein said server is adapted to display a plurality of options on said mobile device, whereby a user of said mobile device can select from said plurality of options so as to issue said mobile device commands.

13. The method according to claim 1, wherein said mobile device is communicated with said server from a remote location.

14. The method according to claim 13, wherein said server is a wireless-accessible server.

15. A method for allowing wireless control of structural appliances, comprising the steps of:

communicating a structural appliance with a server;  
programming said server to accept mobile device commands;  
converting said mobile device commands into structural appliance commands; and

issuing said structural appliance commands to said structural appliance.

16. A method for remote control of an HVAC system, comprising the steps of:

communicating a HVAC system with a server programmed to accept mobile device commands;

communicating a mobile device with said server;  
issuing said mobile device commands from said mobile device to said server;

converting said mobile device commands to HVAC system commands; and



issuing said HVAC system commands from said server to said HVAC system, whereby wireless control of said HVAC system is established.

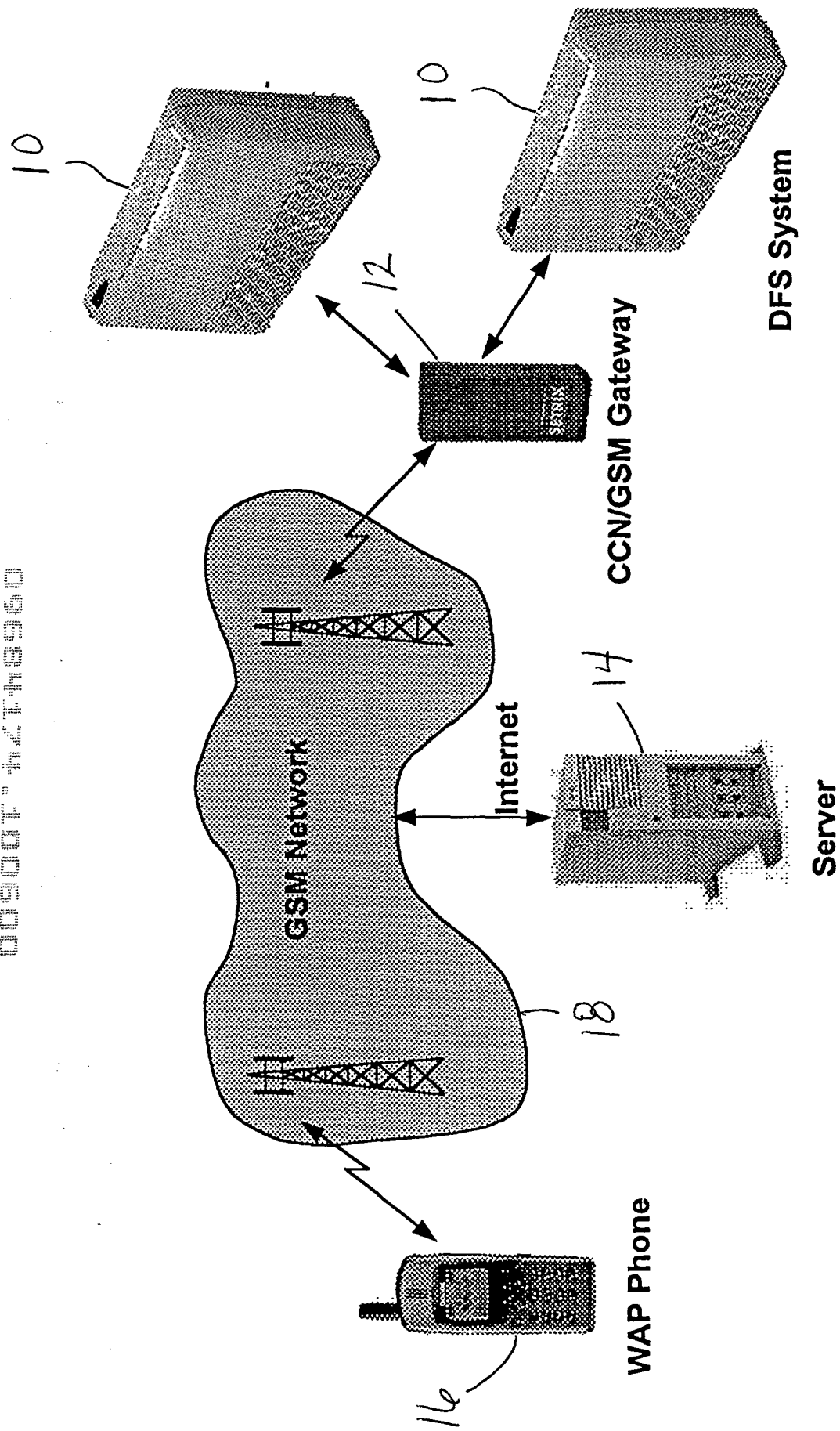
17. The method according to claim 16, wherein said HVAC system is a non-central HVAC system.

18. The method according to claim 16, wherein said mobile device is operated by an energy provider and wherein said HVAC system comprises a plurality of HVAC systems of customers of said energy provider.

ABSTRACT

A method for remote control of structural appliances includes the steps of communicating a structural appliance with a server programmed to accept mobile device commands; communicating a mobile device with the server; issuing the mobile device commands from the mobile device to the server; converting the mobile device commands to structural appliance commands; and issuing the structural appliance commands from the server to the structural appliance, whereby wireless control of the structural appliance is established.





FIGURE

Practitioner's Docket No. 00-623

PATENT

**COMBINED DECLARATION AND POWER OF ATTORNEY**(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL,  
CONTINUATION, OR C-I-P)

As a below named inventor, I hereby declare that:

**TYPE OF DECLARATION**

This declaration is of the following type:

(check one applicable item below)

☒ original.☐ design.

NOTE: With the exception of a supplemental oath or declaration submitted in a reissue, a supplemental oath or declaration is not treated as an amendment under 37 CFR 1.312 (Amendments after allowance). M.P.E.P. § 714.16, 7th Edition.

☐ supplemental.

NOTE: If the declaration is for an International Application being filed as a divisional, continuation or continuation-in-part application, do not check next item; check appropriate one of last three items.

☐ national stage of PCT.

NOTE: If one of the following 3 items apply, then complete and also attach ADDED PAGES FOR DIVISIONAL, CONTINUATION OR C-I-P.

NOTE: See 37 C.F.R. § 1.63(d) (continued prosecution application) for use of a prior nonprovisional application declaration in the continuation or divisional application being filed on behalf of the same or fewer of the inventors named in the prior application.

☐ divisional.☐ continuation.

NOTE: Where an application discloses and claims subject matter not disclosed in the prior application, or a continuation or divisional application names an inventor not named in the prior application, a continuation-in-part application must be filed under 37 C.F.R. § 1.53(b) (application filing requirements — nonprovisional application).

☐ continuation-in-part (C-I-P).**INVENTORSHIP IDENTIFICATION**

**WARNING:** If the inventors are each not the inventors of all the claims, an explanation of the facts, including the ownership of all the claims at the time the last claimed invention was made, should be submitted.

My residence, post office address and citizenship are as stated below, next to my name. I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter that is claimed, and for which a patent is sought on the invention entitled:

**TITLE OF INVENTION**

METHOD FOR WIRELESS DATA EXCHANGE FOR CONTROL OF STRUCTURAL  
APPLIANCE SUCH AS HEATING, VENTILATION REFRIGERATION AND  
AIR CONDITIONING

(Declaration and Power of Attorney [1-1]—page 1 of 7)

09684474-100600

## SPECIFICATION IDENTIFICATION

the specification of which:

(complete (a), (b), or (c))

(a) ☒ is attached hereto.

NOTE: "The following combinations of information supplied in an oath or declaration filed on the application filing date with a specification are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 CFR 1.63:

"(1) name of inventor(s), and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration on filing;

"(2) name of inventor(s), and attorney docket number which was on the specification as filed;  
or

"(3) name of inventor(s), and title which was on the specification as filed."

Notice of July 13, 1995 (1177 O.G. 60).

(b) ☐ was filed on \_\_\_\_\_, as ☐ Serial No. 0 / \_\_\_\_\_  
or ☐ \_\_\_\_\_  
and was amended on \_\_\_\_\_ (if applicable).

NOTE: Amendments filed after the original papers are deposited with the PTO that contain new matter are not accorded a filing date by being referred to in the declaration. Accordingly, the amendments involved are those filed with the application papers or, in the case of a supplemental declaration, are those amendments claiming matter not encompassed in the original statement of invention or claims. See 37 C.F.R. § 1.67.

NOTE: "The following combinations of information supplied in an oath or declaration filed after the filing date are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 CFR 1.63:

"(A) application number (consisting of the series code and the serial number, e.g., 08/123,456);

"(B) serial number and filing date;

"(C) attorney docket number which was on the specification as filed;

"(D) title which was on the specification as filed and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration; or

"(E) title which was on the specification as filed and accompanied by a cover letter accurately identifying the application for which it was intended by either the application number (consisting of the series code and the serial number, e.g., 08/123,456), or serial number and filing date. Absent any statement(s) to the contrary, it will be presumed that the application filed in the PTO is the application which the inventor(s) executed by signing the oath or declaration."

M.P.E.P. § 601.01(a), 7th Ed.

(c) ☐ was described and claimed in PCT International Application No. \_\_\_\_\_, filed on \_\_\_\_\_ and as amended under PCT Article 19 on \_\_\_\_\_ (if any).

(Declaration and Power of Attorney [1-1]—page 2 of 7)

**SUPPLEMENTAL DECLARATION (37 C.F.R. § 1.67(b))**

(complete the following where a supplemental declaration is being submitted)

- ☐ I hereby declare that the subject matter of the
- ☐ attached amendment
  - ☐ amendment filed on \_\_\_\_\_

was part of my/our invention and was invented before the filing date of the original application, above-identified, for such invention.

**ACKNOWLEDGEMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR**

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56,

(also check the following items, if desired)

- ☒ and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and
- ☐ in compliance with this duty, there is attached an information disclosure statement, in accordance with 37 C.F.R. § 1.98.

**PRIORITY CLAIM (35 U.S.C. §§ 119(a)-(d))**

NOTE: "The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by § 1.63. The claim for priority and the certified copy of the foreign application specified in 35 U.S.C. 119(b) must be filed in the case of an interference (§ 1.630), when necessary to overcome the date of a reference relied upon by the examiner, when specifically required by the examiner, and in all other situations, before the patent is granted. If the claim for priority or the certified copy of the foreign application is filed after the date the issue fee is paid, it must be accompanied by a petition requesting entry and by the fee set forth in § 1.17(i). If the certified copy is not in the English language, a translation need not be filed except in the case of interference; or when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner, in which event an English language translation must be filed together with a statement that the translation of the certified copy is accurate." 37 C.F.R. § 1.55(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §§ 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

(complete (d) or (e))

- (d) ☒ no such applications have been filed.
- (e) ☐ such applications have been filed as follows.

NOTE: Where item (c) is entered above and the International Application which designated the U.S. itself claimed priority check item (e), enter the details below and make the priority claim.

(Declaration and Power of Attorney [1-1]—page 3 of 7)

0968474-100600

**PRIOR FOREIGN/PCT APPLICATION(S) FILED WITHIN 12 MONTHS  
(6 MONTHS FOR DESIGN) PRIOR TO THIS APPLICATION  
AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. § 119(a)-(d)**

COUNTRY (OR INDICATE IF PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 37 USC 119
			<input type="checkbox"/> YES    NO <input type="checkbox"/>
			<input type="checkbox"/> YES    NO <input type="checkbox"/>
			<input type="checkbox"/> YES    NO <input type="checkbox"/>
			<input type="checkbox"/> YES    NO <input type="checkbox"/>
			<input type="checkbox"/> YES    NO <input type="checkbox"/>

**CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATION(S)**  
(34 U.S.C. § 119(e))

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

**PROVISIONAL APPLICATION NUMBER**

**FILING DATE**

\_\_\_\_ / \_\_\_\_\_  
 \_\_\_\_ / \_\_\_\_\_  
 \_\_\_\_ / \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**CLAIM FOR BENEFIT OF EARLIER US/PCT APPLICATION(S)  
UNDER 35 U.S.C. § 120**

- ☐ The claim for the benefit of any such applications are set forth in the attached ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART (C-I-P) APPLICATION.

(Declaration and Power of Attorney [1-1]—page 4 of 7)

0968474-100600

**ALL FOREIGN APPLICATION(S), IF ANY, FILED MORE THAN 12 MONTHS  
(6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION**

NOTE: If the application filed more than 12 months from the filing date of this application is a PCT filing forming the basis for this application entering the United States as (1) the national stage, or (2) a continuation, divisional, or continuation-in-part, then also complete ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR C-I-P APPLICATION for benefit of the prior U.S. or PCT application(s) under 35 U.S.C. § 120.

**POWER OF ATTORNEY**

I hereby appoint the following practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

(list name and registration number)

Robert H. Bachman, (19,374); Gregory P. LaPointe, (28,395);  
Barry L. Kelmachter (29,999); and George A. Coury, (34,309)

(check the following item, if applicable)

- ☒ I hereby appoint the practitioner(s) associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.
- ☐ Attached, as part of this declaration and power of attorney, is the authorization of the above-named practitioner(s) to accept and follow instructions from my representative(s).

NOTE: "Special care should be taken in continuation or divisional applications to ensure that any change of correspondence address in a prior application is reflected in the continuation or divisional application. For example, where a copy of the oath or declaration from the prior application is submitted for a continuation or divisional application filed under 37 CFR 1.53(b) and the copy of the oath or declaration from the prior application designates an old correspondence address, the Office may not recognize, in the continuation or divisional application, the change of correspondence address made during the prosecution of the prior application. Applicant is required to identify the change of correspondence address in the continuation or divisional application to ensure that communications from the Office are mailed to the current correspondence address. 37 CFR 1.63(d)(4)." § 601.03, M.P.E.P., 7th Edition.

SEND CORRESPONDENCE TO

DIRECT TELEPHONE CALLS TO:  
(Name and telephone number)

☒ Address  
BACHMAN & LAPOINTE, P.C.  
900 Chapel Street, Suite 1201  
New Haven, CT 06510-2802

George A. Coury  
(203) 777-6628 , Ext. 113

☐ Customer Number \_\_\_\_\_

(complete the following if applicable)

Since this filing is a ☐ continuation ☐ divisional there is attached hereto a Change of Correspondence Address so that there will be no question as to where the PTO should direct all correspondence.

(Declaration and Power of Attorney [1-1]—page 5 of 7)

0968474-100600

## DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

## SIGNATURE(S)

NOTE: Carefully indicate the family (or last) name, as it should appear on the filing receipt and all other documents.

NOTE: Each inventor must be identified by full name, including the family name, and at least one given name without abbreviation together with any other given name or initial, and by his/her residence, post office address and country of citizenship. 37 CFR § 1.63(a)(3).

NOTE: Inventors may execute separate declarations/oaths provided each declaration/oath sets forth all the inventors. Section 1.63(a)(3) requires that a declaration/oath, inter alia, identify each inventor and prohibits the execution of separate declarations/oaths which each sets forth only the name of the executing inventor. 62 Fed. Reg. 53,131, 53,142, October 10, 1997.

### Full name of sole or first inventor

MARK MORELLI  
(GIVEN NAME) (MIDDLE INITIAL OR NAME) FAMILY (OR LAST NAME)

Inventor's signature \_\_\_\_\_

Date \_\_\_\_\_ Country of Citizenship \_\_\_\_\_

Residence \_\_\_\_\_

Post Office Address \_\_\_\_\_

### Full name of second joint inventor, if any

MARY JO DUNN  
(GIVEN NAME) (MIDDLE INITIAL OR NAME) FAMILY (OR LAST NAME)

Inventor's signature \_\_\_\_\_

Date \_\_\_\_\_ Country of Citizenship \_\_\_\_\_

Residence \_\_\_\_\_

Post Office Address \_\_\_\_\_

### Full name of third joint inventor, if any

CHOP GOMEZ-ZOEBISCH  
(GIVEN NAME) (MIDDLE INITIAL OR NAME) FAMILY (OR LAST NAME)

Inventor's signature \_\_\_\_\_

Date \_\_\_\_\_ Country of Citizenship \_\_\_\_\_

Residence \_\_\_\_\_

Post Office Address \_\_\_\_\_

(Declaration and Power of Attorney [1-1]—page 6 of 7)

(check proper box(es) for any of the following added page(s)  
that form a part of this declaration)

- ☐ **Signature** for fourth and subsequent joint inventors. *Number of pages added* \_\_\_\_\_

\* \* \*

- ☐ **Signature** by administrator(trix), executor(trix) or legal representative for deceased or incapacitated inventor. *Number of pages added* \_\_\_\_\_

\* \* \*

- ☐ **Signature** for inventor who refuses to sign or cannot be reached by person authorized under 37 CFR 1.47. *Number of pages added* \_\_\_\_\_

\* \* \*

- ☐ Added page for **signature** by one joint inventor on behalf of deceased inventor(s) where legal representative cannot be appointed in time. (37 CFR 1.47)

\* \* \*

- ☐ Added pages to combined declaration and power of attorney for divisional, continuation, or continuation-in-part (C-I-P) application.

☐ Number of pages added \_\_\_\_\_

\* \* \*

- ☐ Authorization of practitioner(s) to accept and follow instructions from representative.

\* \* \*

(if no further pages form a part of this Declaration,  
then end this Declaration with this page and check the following item)

**XX** This declaration ends with this page.